

MONTHLY WEATHER REVIEW.

VOL. XI.

WASHINGTON, D. C., FEBRUARY, 1883.

No. 2.

INTRODUCTION.

This REVIEW contains a general summary of the meteorological reports received from the regular and voluntary observers of the Signal Service during the month of February, and up to March 20th. A brief description is also given of storms which occurred in the north Atlantic during the month, based upon observations taken at 7 a. m., Washington time.

The most marked features of the month have been:—

1st. The destructive floods which occurred in the Ohio and its tributaries, causing great loss of life and property. The water in the Ohio, near Cincinnati, Louisville, and southward to Cairo, rose above the highest water-mark of any previous flood, and the value of property destroyed is estimated at \$30,000,000. The floods in the lower Mississippi had not reached their maximum height at the close of the month, but in many places they have equalled the floods of last year. The warning issued by this service gave from ten to fifteen days' notice of the approach of these floods, and the citizens in the threatened district had ample time to secure property and seek places of safety.

The following note, relative to the work of the Signal Service, appeared in the "Cincinnati News" of February 17:—

The United States Signal Service Department has been of great service during the flood, more so, in fact, than the majority of our citizens are aware of, and their timely warnings of the coming flood have been instrumental in saving over \$1,000,000 worth of goods in this city alone. Each rise has been prophesied from twelve to twenty-four hours in advance of its arrival, and the merchants promptly notified, thus enabling them to remove to a place of safety. We are pleased to learn that those most benefited by these admonitions recognize their value, and fully appreciate the services rendered. Mr. E. B. Dunn, the officer in charge in this city, has worked diligently to place his bulletins before the public, which, we are assured, has proved a very difficult undertaking, and to him the merchants of the city have tendered their heartfelt thanks.

2d. The month has been colder than the mean for February in all sections west of the Mississippi river, the severest weather occurring in the Rocky mountains and northern plateau regions, where the temperature has averaged from eight to sixteen degrees below the normal for the month.

It averaged about four degrees below the normal in the north-west and in the upper lake region, and from four to five degrees below in Oregon and California. In New England, and thence westward to Lake Erie, the temperature has been slightly below the mean.

In the southern states east of the Mississippi river, it has been warmer than usual, the greatest excess occurring in Florida, where it averaged six and five tenths degrees above the mean.

The winter has been colder than usual generally throughout the United States, the exceptions being in the south Atlantic and east Gulf states, and on the south Pacific coast, where it was slightly warmer than usual. In the northwestern sections the temperature was over four degrees below the average winter temperature.

3d. The rainfall on the Pacific coast during the past winter has not been sufficient to assure a medium wheat crop in that region.

There has been a deficiency of over four inches in central California and Oregon during February, and larger deficiencies in these sections during the previous winter months. This important crop, therefore, depends largely upon the spring rains, which, in that section, are usually very light.

The rainfall in the northern states has been generally above the average, the greatest excess above the average being 3.86 inches in the Ohio valley.

4th. On chart ii. is exhibited the limits within which ice has been observed from vessels in the north Atlantic during the month of February. The reports show that ice dangerous to shipping is slowly drifting southward between latitudes n. 43° and 51° and longitudes w. 45° and 48°. Within this region many icebergs and large fields of ice were observed, and vessels approaching or leaving the coast of the United States can only avoid danger by sailing over a course south of the 40th parallel when west of the 30th meridian.

In the preparation of this REVIEW, the following data received up to March 20th, have been used; viz.: the regular tri-daily weather-charts, containing data of simultaneous observations taken at one hundred and thirty-six Signal Service stations and thirteen Canadian stations, as telegraphed to this office; one hundred and eighty-seven monthly journals, and one hundred and seventy-six monthly means from the former, and thirteen monthly means from the latter; two hundred and twenty-eight monthly registers from voluntary observers; fifty-one monthly registers from United States Army post surgeons; marine records; international simultaneous observations; marine reports, through the co-operation of the "New York Herald Weather Service;" abstracts of ships' logs, furnished by the publishers of "The New York Maritime Register;" monthly weather-reports from the local weather services of Indiana, Kansas, Nebraska, Missouri, and Tennessee, and of the Central Pacific railway company; trustworthy newspaper extracts; and special reports.

ATMOSPHERIC PRESSURE.

[Expressed in inches.]

The distribution of the mean atmospheric pressure for the month of February, 1883, determined from the tri-daily telegraphic observations of the Signal Service, is shown by the isobarometric lines, in red, on chart iii.

The area of mean high pressure which was central in northern California and Nevada during January has apparently moved northward and now extends over Oregon and Washington Territory, the pressure, however, increased about four hundredths of an inch during the month at the centre of the high area. The area of lowest mean pressure extends over the southern part of Arizona, where the barometer ranges below 30.05. A comparison of chart iii. for this and the preceding month (January) shows that there has been a general movement of the high and low areas of pressure to the northward. The pressure has averaged about 30.25 over the greater portion of the United States, and compared with the preceding month, there has been a general increase of mean pressure in all districts except on the south and central Pacific coasts, where it has decreased.

DEPARTURES FROM THE NORMAL COMPARED WITH THE MEAN OF FEBRUARY.

The pressure has averaged more than two-tenths of an inch above the normal in the upper Mississippi and Missouri valleys, and in the northern plateau region. It has averaged more than one-tenth above the normal in the districts east of the Mississippi river, except in Florida, where it is slightly above the normal. On the Pacific coast, the pressure increases with the latitude, it being one-tenth above the normal in Washington Territory, and five-hundredths of an inch below in southern California.

BAROMETRIC RANGES.

The monthly barometric ranges have been greatest in the northern plateau and north Pacific coast region, in the upper Mississippi and Missouri valleys, and in New England. They have been least in the south Atlantic and east Gulf states, and in the southern plateau.

The following are the greatest monthly ranges reported: Umatilla, Oregon, 1.55; Lewiston, Idaho, 1.52; Eastport, Maine, 1.40; Dayton, Washington Territory, 1.38; Leavenworth, Kansas, 1.38; Omaha, Nebraska, 1.36; Yankton, Dakota, 1.33, record from 10th to 28th; Portland, Maine, 1.32; Boston, Massachusetts, 1.31; Portland, Oregon, 1.30.

The least monthly ranges are: Key West, Florida, 0.34; Punta Rassa, Florida, 0.44; Charleston, South Carolina, 0.50; Jacksonville, Florida, 0.51; Savannah, Georgia, 0.53; Cedar Keys, Florida, 0.53; Atlanta, Georgia, 0.58; Augusta, Georgia, 0.59; Smithville, North Carolina, 0.60; Fort Grant, Arizona, 0.62; Fort Macon, North Carolina, 0.64.

In the several districts, the monthly ranges have varied as follows:—

New England.—From 1.15 at New Haven, Connecticut, to 1.40 at Eastport, Maine.

Middle Atlantic states.—From 0.86 at Lynchburg, Virginia, to 1.19 at Albany, New York.

South Atlantic states.—From 0.50 at Charleston, South Carolina, to 0.79 at Kittyhawk, North Carolina.

Florida peninsula.—From 0.34 at Key West to 0.53 at Cedar Keys.

Eastern Gulf.—From 0.67 at Pensacola, Florida, to 0.92 at Vicksburg, Mississippi.

Western Gulf.—From 0.69 at Port Eads, Louisiana, to 1.16 at Fort Smith, Arkansas.

Rio Grande valley.—From 0.88 at Brownsville, Texas, to 1.11 at Eagle Pass, Texas.

Ohio valley and Tennessee.—From 0.72 at Chattanooga, Tennessee, to 1.11 at Champaign, Illinois.

Lower lakes.—From 0.91 at Cleveland, Ohio, to 1.19 at Oswego, New York.

Upper lakes.—From 0.94 at Port Huron, Michigan, to 1.19 at Escanaba, Michigan.

Extreme northwest.—From 0.95 at Bismarck, Dakota, to 1.21 at Saint Vincent, Minnesota.

Upper Mississippi valley.—From 1.07 at Cairo, Illinois, and 1.08 at Saint Paul, Minnesota, to 1.29 at Des Moines, Iowa.

Missouri valley.—From 1.08 at Fort Bennett, Dakota, to 1.38 at Leavenworth, Kansas.

Northern slope.—From 0.87 at Fort Shaw, Montana, to 1.24 at North Platte, Nebraska.

Middle slope.—From 0.93 on the summit of Pike's Peak, Colorado, to 1.34 at West Las Animas, Colorado.

Southern slope.—From 0.81 at Fort Davis, Texas, to 1.21 at Fort Sill, Indian Territory.

Southern plateau.—From 0.62 at Fort Grant, Arizona, to 0.88 at Santa Fe, New Mexico, and 0.88 at El Paso, Texas.

Middle plateau.—From 1.16 at Pioche, Nevada, to 1.17 at Salt Lake City, Utah.

Northern plateau.—From 1.09 at Eagle Rock, Idaho, to 1.55 at Umatilla, Oregon.

North Pacific.—From 1.12 at Roseburg, Oregon, to 1.30 at Portland, Oregon.

Middle Pacific.—From 1.01 at San Francisco, California, to 1.08 at Red Bluff, California.

South Pacific.—From 0.69 at San Diego, California, to 1.03 at Visalia, California, and 1.06 at Yuma, Arizona.

AREAS OF HIGH BAROMETER.

Eight areas of high barometer have been sufficiently well marked as to render it possible to locate the centre of each at the successive morning reports from the date of first appearance until each high area had passed beyond the limits of the stations, or disappeared. These areas were generally first observed as cold waves in British America, west of the Hudson's bay region, and they moved in a south or southeast course until the centre of greatest pressure reached the Mississippi valley. Two of these areas moved southward to the west Gulf and disappeared. One was last observed in Tennessee, but was immediately followed by the development of a second high area in the northwest without the usual low area preceding it. Those traced as far eastward as the Atlantic coast were forced to the east or north of east as they approached the coast-line. The only exception to this occurred on the 23d and 24th, when high-area vi. passed over Canada to the southeast, but the observation made on the 25th showed that the course was changing toward the east as it advanced.

I.—The month opened with this area central near Lake Winnipeg, the temperature being 35° below zero at Saint Vincent, Minnesota; Fort Garry, and Minnedosa, British America, on the morning of the 1st. This area remained nearly stationary until the morning of the 3d, the lowest temperature occurring on the morning of the 2d, when it fell to -40° at Fort Garry and -38° at Saint Vincent and Minnedosa, with barometer readings ranging from 30.80 to 30.93. An extended low area developed over the southern plateau region on the 1st and 2d, when these two conditions included within their limits the entire territory of the United States. On the morning of the 2d, the barometer rose above 30.60 in the middle and New England states, and it exceeded that in the northwestern sections of the country. The isobars of 30.50, 30.40, and 30.30 were traced from the south Atlantic coast to the north Pacific coast; and those of 30.20, 30.10, 30.00, and 29.90 from the Gulf coast to the California coast around the low area which was central in Arizona. Snow occurred during the 2d, in the lake region and thence westward to Colorado and Montana, and heavy rains fell in the Mississippi valley. The formation of an extended trough of low pressure, which extended northeastward toward Lake Ontario, apparently retarded the movement of this area until the 3d, when it moved rapidly southward to the lower Missouri valley, where it was central on the morning of the 5th. The course changed to easterly on the 5th, and it passed over the Ohio valley and middle Atlantic states, disappearing to the east of the coast-line during the 6th. A severe norther occurred in Texas on the 3d and 4th, the wind reaching a velocity of forty-three miles per hour at Galveston and thirty-five miles per hour at Indianola, attended by sleet at the point last named, where the temperature fell 50° in sixteen hours. The sudden changes in temperature attending this norther are indicated by the following reports made at 3 p. m. of the 3d: Memphis, Tennessee, 76°; Little Rock, Arkansas, 38°; Fort Smith, Arkansas, 16°; Denison, Texas, 4°; Fort Supply, Indian Territory, 4°; Indianola, Texas, 76°; San Antonio, Texas, 35°. The unusual feature of this cold wave was that while it caused freezing weather in the Gulf states, the cold did not extend eastward as is usual for similar changes of temperature. This was doubtless due to the easterly course of the high area over the Ohio valley.

II.—This was a well-marked area of high pressure central in Nebraska on the morning of the 7th. It moved southeastward to southern Missouri, causing freezing weather in the northern part of the Gulf states, and a light norther in Texas on the night of the 7th. During the 8th, the centre remained near Cairo, but by the morning of the 9th, the barometer had risen about two-tenths of an inch in the northwest, and the centre of greatest pressure had passed northwestward to a point near Yankton, Dakota. The temperature continued below zero at the most northerly stations, while this area passed westward

over the lake region and Saint Lawrence valley during the 9th and 10th. The pressure increased as the centre of this area moved eastward, and upon reaching the Saint Lawrence valley the barometric pressure was above 30.70. The lowest temperature observed during the transit of this high area, was -35° at Fort Garry, Manitoba, on the morning of the 9th. It fell to -32° at Rockliffe, Ontario, on the 10th. After passing over New England attended by cold, clear weather, on the 10th, the course changed to the northeast, and it disappeared to the northeast of the Maritime Provinces on the 11th.

III.—This was an area of slight energy which developed in the Platte river valley on the 11th. It moved directly eastward, the pressure increasing three-tenths of an inch during the 11th, and about one-tenth during the 12th, when it was central in the middle Atlantic states. On the following day it disappeared to the east of the coast-line, followed by heavy rains, north of the Ohio valley, and light rains in the southern states.

IV.—Approached the stations from British Columbia, finally extending over all of the Pacific coast districts and eastward as far as Dakota, where it was central in the upper Missouri valley on the 16th. At the morning report of this date, the temperature ranged from 15° to 20° below zero, with the barometer reading 30.50 in the region of greatest cold. During the succeeding four days, this cold wave moved directly south-east, preceded by very heavy rains in the southwest, a violent norther on the Gulf coast on the 17th and 18th, and freezing weather as far south as Indianola and Galveston, Texas, and Vicksburg, Mississippi. The wind reached a velocity of sixty miles per hour at Indianola; fifty-nine at Galveston; and thirty-eight miles at Port Eads, Louisiana. The centre was near Cairo, Illinois, on the 19th, where the pressure was 30.66. The barometer fell slowly during the succeeding day, and this high area disappeared without passing beyond the limits of the stations of observation.

V.—This area followed immediately to the west of number iv., approaching from the same region, passing over almost the same track, and, in like manner, disappeared within the limits of the stations. It moved with slight energy, the pressure decreasing from the date of its first observation until its limits were no longer traced by the isobarometric lines.

VI.—This is marked as the most northerly area of high pressure traced during the month. The greatest pressures attending this disturbance were not observed at the northwest Signal-Service stations, as it advanced from the region west of Hudson's bay southeastward over Canada and thence over northern New England to the Atlantic. It extended over the northern states on the 22d and 23d, the pressure increasing to 30.70 and the temperature falling about 20° . At Rockliffe, Ontario, the temperature fell to -27° on the morning of the 24th, and it was generally below zero at stations in northern New England and northern New York. Fair weather attended this cold wave, the only precipitation being the light snows which occurred at the immediate coast stations, when the cold fresh to brisk winds occurred in the Gulf. The temperature changes were gradual, and generally fair weather prevailed at stations within the limits of this area during the last three days of the month. At the midnight report of the 28th, the centre had passed to the south of the Gulf coast and the temperature was rising at all stations, attended by clear weather and south to west winds.

AREAS OF LOW BAROMETER.

Ten areas of low barometer have been traced over the regions occupied by the Signal-Service stations during the month. All depressions traced to the eastern portion of the continent passed over the Saint Lawrence valley from the westward, and in no case has the centre of any depression passed to the south of the Ohio valley or middle states. Two areas, ii. and iv., appear to have been secondary depressions, developing, as noted on chart i., while the first disturbance observed was central in the Rocky mountain region.

The following table shows the latitude and longitude in

which each depression was first and last observed, and the hourly velocity of each depression within the limits of the stations of observation:—

Areas of low barometer.	FIRST OBSERVED.		LAST OBSERVED.		Average velocity in miles per hour.
	Lat. N.	Long. W.	Lat. N.	Long. W.	
No. I.	$39^{\circ} 00'$	$119^{\circ} 00'$	$37^{\circ} 00'$	$111^{\circ} 00'$	21
II.	$34^{\circ} 00'$	$95^{\circ} 00'$	$45^{\circ} 00'$	$66^{\circ} 00'$	41
III.	$34^{\circ} 00'$	$114^{\circ} 00'$	$37^{\circ} 30'$	$102^{\circ} 00'$	40
IV.	$39^{\circ} 00'$	$87^{\circ} 00'$	$47^{\circ} 00'$	$63^{\circ} 00'$	54
V.	$53^{\circ} 00'$	$99^{\circ} 00'$	$43^{\circ} 00'$	$62^{\circ} 00'$	46
VI.	$45^{\circ} 00'$	$127^{\circ} 00'$	$51^{\circ} 00'$	$61^{\circ} 00'$	33
VII.	$37^{\circ} 00'$	$102^{\circ} 00'$	$44^{\circ} 30'$	$83^{\circ} 00'$	33
VIII.	$47^{\circ} 30'$	$94^{\circ} 00'$	$40^{\circ} 00'$	$62^{\circ} 00'$	37.5
IX.	$29^{\circ} 00'$	$100^{\circ} 00'$	$51^{\circ} 00'$	$66^{\circ} 00'$	19
X.	$51^{\circ} 00'$	$92^{\circ} 00'$	$43^{\circ} 00'$	$67^{\circ} 00'$	40
Mean hourly velocity.....					36.4

In the following table is given the number of areas of low pressure traced during the month of February, since 1874:—

Month.	Year.	Number.	Month.	Year.	Number.
February.....	1874	12	February....	1879	9
Do.....	1875	14	Do.....	1880	15
Do.....	1876	10	Do.....	1881	10
Do.....	1877	12	Do.....	1882	11
Do.....	1878	12	Do.....	1883	10

I.—On the 1st of February the pressure was six-tenths of an inch below the mean of the month, at Pioche, Nevada, and from three to five-tenths below the mean, in California, Arizona, and Utah, while it was about as much above the mean at the northern stations. This depression moved slowly to the eastward during the 1st and 2d, but on the 3d, low-area ii. developed to the eastward, in Texas, and the barometer rose slowly at the centre of low-area i., causing it to disappear on the 3d, near the point where it was first observed.

II.—As previously stated, this depression formed in Texas, while the barometer was low to the westward. On the morning of the 3d, the centre of disturbance was located near Saint Louis, although the wind-direction gave no definite indications of a cyclonic movement of the atmosphere. The high area was advancing rapidly from the northwest, and the cold air meeting the moist air from the Gulf caused heavy snows and rains on the margin of the cold wave which, on the 3d, extended from the lower lake region to southwestern Texas. On the afternoon of the 3d, the depression was well defined, central in the Ohio valley, and by midnight it had become more contracted, the cold air from the west apparently crowding the isobarometric lines on the west quadrants of the storm. It was most clearly defined on the morning of the 4th, almost circular in form, and central near Montreal, Canada, enclosed by the isobars of 29.80 and 29.70. The course changed to the east at this report, and when last observed, it was apparently losing energy, although the pressure was decreasing at the centre of disturbance. This storm was most violent when it was nearest the cold wave which followed. The rainfall being very great in the Ohio valley on the 4th, and the snow in the lake region and Saint Lawrence valley, interrupted railroad communication.

III.—This depression was central in southern California at the midnight report of the 5th, and it moved with but slight energy to eastern Colorado during the 6th. Light snow and rain fell in Arizona and Nevada, and rain in California, on the 6th. The afternoon report of this date showed a depression central in eastern Colorado, the barometer being highest on the middle Atlantic coast, with snow or rain prevailing from the Atlantic coast westward to the Rocky mountains. A slight depression was observed in the Ohio valley, while the area of least pressure was located in Colorado. This area disappeared suddenly on the night of the 7th, the barometer at West Las Animas, near the centre, rising from 29.86 to 30.23 in eight hours. Cautionary signals were displayed in advance of the storm at stations on the Atlantic coast north of Hatteras, North Carolina, but

the most violent winds occurred after the storm-centre had passed the coast-line.

IV.—Developed in the Ohio valley on the afternoon of the 6th, as a secondary depression, the barometer being lowest in Colorado. It passed to the northeastward over the lower lake region and northern New England, causing rain and snow in the northern states east of the Mississippi, and general rains in the southern states during the 6th and the morning of the 7th. It disappeared to the northeast of New England, where the barometer was unusually low on the afternoon of the 7th.

V.—This was a slight depression which advanced from the region near Lake Winnipeg on the 10th, following a southeasterly course over the north portions of the lake region, and crossing the Saint Lawrence river near Montreal on the 11th. Light snows occurred in the northern districts, but the disturbance developed only slight energy until it had reached the Atlantic in the vicinity of Halifax, Nova Scotia, when the wind shifted to northwesterly on the New England coast with increasing force. The following maximum wind-velocities were reported: Barnegat City, New Jersey, 52 miles, nw.; Hatteras and Kittyhawk, North Carolina, 44, ne.; Sandy Hook, New Jersey, 43, nw.; Block Island, Rhode Island, 46, n. After passing east of the coast, this storm apparently moved in a northeast direction, following the general course of north Atlantic storms.

VI.—Developed in western Kansas during the night of the 13th, while an extensive depression was present on the Pacific coast. It became well defined during the 14th, and moved in a northeasterly direction over Missouri, Iowa, and the upper lake region, causing light rain in all districts south of the lake region, and snow in New England and at the northern stations as far west as the Missouri valley on the 15th. It disappeared when near lake Huron, probably joining the low area which followed immediately to the west.

VII.—This is the only storm occurring during the month which has been traced from the Pacific coast eastward across the Rocky mountains to the Atlantic. General rains prevailed on the Pacific coast during the 13th and 14th, while this disturbance was advancing from the Pacific to the coast of Oregon. The easterly movement was apparently retarded until the centre of disturbance had passed to the east of the coast, when the velocity increased rapidly, causing the storm-centre to pass from Oregon to Colorado in twenty-four hours. The afternoon reports of the 15th placed the centre of this disturbance in eastern Colorado, the most southerly point of the storm's track. The course changed to the northeast, and during the night of the 15th, and on the following day, the weather was decidedly stormy in the lake region and northwest. The cold wave which followed the storm caused a rapid increase of the barometric gradient in the west quadrants of the storm, and the sudden changes of temperature which occurred are indicated by the north and south directions of the the isothermal lines in the Mississippi valley on the 16th. After passing over the upper lake region the storm followed the general course of the Saint Lawrence valley, and disappeared to the east. It was most severe while passing from the upper Mississippi valley over the upper lake region.

VIII.—Apparently developed in Minnesota during the night of the 19th. It moved eastward over Lake Superior to the upper Saint Lawrence valley on the 20th, increasing in energy and becoming more contracted. This disturbance, however, did not effect the weather in the United States, generally, but light snow occurred in the northern portions of the middle and New England states and at stations in the lake region as the storm-centre passed over these districts. After crossing the Saint Lawrence river, the storm-track inclined to the north of east, and the barometer fell rapidly after the centre passed east of the coast-line.

IX.—This disturbance was observed in southern Texas on the morning of the 23d, although the reports of the 22d showed that a storm was slowly developing in that region. Heavy rains occurred in the southern states during the 23d as the

storm passed northeastward over Texas, and in the Ohio valley and upper Mississippi and lower Missouri valleys on the 24th. The morning reports of the 24th showed the centre of disturbance to be in southern Missouri, and on the following morning it had passed over Lakes Michigan and Huron. It increased greatly in energy during the 24th, causing heavy rains and high winds in the south and middle Atlantic states and lake region, and snow and sleet in the northwest, where cold, freezing weather quickly followed. This was probably the most severe storm of the month, and the floods in the lower Mississippi were greatly increased by the heavy rains which fell during the 23d and 24th. After passing the lake region, the barometer fell to 29.30 near the centre of disturbance, and violent gales occurred at stations northeast of New England. The gales continued until the 27th, accompanied by very cold weather. This storm was last located on the night of the 25th north of Gaspe or Father Point.

X.—This was a slight disturbance which passed eastward north of the lake region on the last day of the month. It was first observed north of Duluth, Minnesota, on the morning of the 27th, and moved in a southeasterly course over New England to the Atlantic, when its course became easterly, and it disappeared without causing any marked change of weather in the United States. Light snow fell in New England during the morning of the 28th, but the weather cleared in that region during the day, and the month closed with unusually clear weather in all districts.

NORTH ATLANTIC STORMS DURING FEBRUARY, 1883.

[Pressure expressed in inches and in millimeters; wind-force by scale of 0—10.]

Chart ii. exhibits the tracks of the principal storms that have occurred over the north Atlantic ocean during February, 1883. The location of the various storm-centres has been approximately determined from reports of observations furnished by agents and captains of ocean steamships and sailing vessels in the north Atlantic, and from other miscellaneous data received at this office up to March 21st. The observations used are, in general, simultaneous, being taken each day at 7 h. 0 m. a. m., Washington, or 0 h. 8 m. Greenwich mean time.

Ten depressions have been traced across the Atlantic; these have moved with more or less rapidity in the usual northeasterly track, but, owing probably to the prevalence of high barometric readings over western Europe, the storm-centres appear to have passed northeastward at some distance from the coasts of the British Isles, but generally sufficiently near to affect the meteorological conditions over those islands. From the 1st to the 15th of February, the weather in the north Atlantic was characterized by a succession of violent and dangerous gales; the depressions numbered iii., iv., v., and vi., caused unusually heavy gales, especially number vi., which exhibited the violence of a tropical hurricane. After the 20th, an area of high pressures apparently spread over the ocean, and the depressions charted after that date appear to have been shallow, and did not develop any unusual energy; the winds diminished in force and generally cloudy weather prevailed till the end of the month.

The following descriptions relate to the storms traced on the chart:—

I.—This was probably a continuation of the storm traced as number xi., of the January chart. On January 31st, the depression was apparently central near N. 47°, W. 37°; it moved eastward and on the 1st, the centre was near N. 48°, W. 20°. Captain Wilson, of the s. s. "Salerno," in N. 49°, W. 22°, reported: January 31st, at 8 p. m., barometer began to fall very rapidly; wind backing to sw. and s. and blowing a heavy gale; at midnight it fell calm with very heavy sea running. On February 1st, at 4 a. m. (in about N. 49° 10', W. 21° 40'), the wind came suddenly from the eastward and continued to blow a furious gale, gradually hauling to ne., n. and nw., the sea blowing over the ship in a continuous sheet of water. As the wind shifted, the barometer began to rise and the wind and sea moderated. On the 2d, the depression was central south of Ireland, and in connection therewith, very strong gales,